Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Advanced Methods to Target and Eliminate	)	CG Docket No. 17-59
Unlawful Robocalls	)	
	)	

<u>REPLY COMMENTS OF VERIZON</u>

William H. Johnson
    Of Counsel

Gregory M. Romano
Christopher D. Oatway
1300 I Street, N.W.
Suite 500 West
Washington, DC 20005
(202) 515-2400

Attorneys for Verizon
and Verizon Wireless

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INTRODUCTION AND SUMMARY

Verizon reiterates its support for USTelecom's proposal that the Commission mandate response code 603 as the industry-wide method for notifying calling parties when their calls are blocked based on analytics.[1] Service providers widely use 603 today and it has been fully standardized by the industry bodies. It can be readily used by calling parties to efficiently learn about instances of blocking so that they can seek redress for any blocking errors. By contrast, response codes 607 and 608 are raw specifications issued by the Internet Engineering Task Force (IETF) that would require development of new profiles based on the uses that the Commission mandates, would need to be operationalized by industry standards bodies, and then would require complex and time-consuming implementation work streams by service providers.

If the Commission nevertheless determines that the existing implementations of the 603 code provide insufficient information to calling parties, network operators could use additional optional parameters already present in the existing 603 industry standard to develop a standardized header with standardized text indicating the call was blocked due to analytics and by what service provider. That would be substantially faster and simpler than introducing brand new SIP codes like 607 or 608 into the ecosystem.

The Commission should make clear that terminating providers shall use *only* 603, whether as it is currently used or as it may be evolved to be accompanied by a reason header with additional information, to indicate analytics-based robocall blocking. Leaving 607 and/or 608 as options for terminating carriers to send would not provide the calling party community with the certainty it needs to monitor for a specific response code used for blocking purposes.

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[1] *See* Comments of USTelecom – The Broadband Association, CG Docket No. 17-59, WC Docket No. 17-97 (filed Jan. 31, 2022) ("*USTelecom Jan. 31, 2022 Comments*").

And if even a small number of terminating providers were to choose to use 607 or 608 instead of 603, industry would need to operationalize and then implement all three of them across all network infrastructure, which would vastly increase service providers' burdens and overall implementation timelines.

The Commission also should recognize that regardless of the approach it picks for notification purposes, originating and transit providers should have the implementation flexibility to prioritize those traffic flows that would have the greatest benefit for their customers, especially their high-volume enterprise callers. While it may be appropriate to establish a specific implementation deadline for terminating service providers engaged in blocking, for other service providers in the path there should not be a date certain for implementation as long as they are making meaningful progress implementing the functionality.

I.   RESPONSE CODE 603 HAS BEEN IMPLEMENTED THROUGHOUT THE ECOSYSTEM AND CAN MEET CALLING PARTIES' NEEDS

A. Calling Parties Can Use 603 *Today* to Effectively Monitor for Blocked Calls and Identify Blocking Parties.

Verizon and others have presented evidence confirming that any 603s returned for other purposes constitute a tiny percentage of overall traffic (on the order of 0.3 to 0.4 percent), so calling parties can easily identify blocking events by monitoring for spikes in 603s.[2] Calling

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[2] *See, e.g.*, Letter from Christopher D. Oatway, Verizon, to Marlene Dortch, Federal Communications Commission, CG Docket No. 17-59 (filed Oct. 29, 2021) (603 codes constitute only about 0.31% of outbound traffic on high-volume enterprise platforms); Letter from Randy Clark, Lumen, to Marlene Dortch, Federal Communications Commission, CG Docket No. 17-59 (filed Nov. 19, 2021) (response codes constitute only 0.4% of outbound traffic).

parties also can readily identify the terminating carrier that blocked the call by looking up the

called party number in industry databases.[3]

The Associations thus are incorrect to assert that real-world data about the usefulness of

603 does not exist.[4] Instead, they continue to cite anecdotal evidence that one bank reported

300-500 603s per hour, but do not provide the total number of calls made on that platform, and

none of the opponents of using 603 engage the record evidence indicating that traffic analysis

showing that the baseline level of 603 is very low.[5] Ample record evidence exists for the

Commission to reasonably conclude that simply monitoring 603 rates gives calling parties the

information needed to identify blocking evidence and take appropriate action.

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[3] *Id.* VON appears to acknowledge in its comments that the identity of the service provider can be readily ascertained in that way. VON Comments at 6 n.7.

[4] *See* Comments of the American Bankers Association, ACA International, American Association of Healthcare Administrative management, American Financial Services Association, Credit Union National Association, Mortgage Bankers Association, National Association of Federally-Insured Credit unions, National Council of Higher Education Resources, and Student Loan Servicing Alliance to the Sixth Further Notice of Proposed Rulemaking, CG Docket No. 17-59, at 6 (filed Jan. 31, 2022) ("*Associations' Comments*").

[5] Without providing enough information to understand their assertion and argument, INCOMPAS and the Cloud Communications Alliance assert that the Commission's interim authorization to use 603 for notification purposes has caused an increase in retries associated with 603 that they imply is problematic to someone. *See* INCOMPAS and Cloud Communications Alliance Comments at 6. Verizon and other major carriers have been returning 603s when blocking calls for years, and as the carrier serving the called party would be the obvious "victims" of excessive retries. Verizon has not experienced significant operational problems due to the volume of retries or its use of the 603 response to notify the caller. Verizon and other service providers' networks do not retry requests to which a 603 response is received, but generally cannot control what call originators themselves choose to do. Indeed, some call originators are likely to retry any unsuccessful calls when the response received indicates rejection due to robocalling analytics, sometimes using the same calling party number and sometimes swapping in a new number, in order to seek other paths to the called party. That is a risk with the response code approach to notification that will be present regardless of the code chosen.

B. If the Commission Decides Calling Parties Need a Dedicated Response Designed to Indicate Blocking, Evolving 603 to Achieve that Outcome Would be Simpler and Faster than Implementing 607/608.

Although mandating the use of 603 as it currently exists would provide an appropriate level of transparency, calling parties have indicated they want a dedicated and uniform response code.[6] If the Commission accepts their argument, the best way to achieve that outcome would be to require industry to develop standardized text to be used in a reason header sent with the 603 response code that indicates in a uniform way the identity of the blocking carrier and that the call has been blocked based on analytics.

The standards work would be simpler and faster for such a "603 Plus" than for a new 607 or 608. The IP-NNI's only task would be to reach a consensus on what the reason header shall say, a project that could be completed in a few months or less. There would be no need to create new practices and protocols for transit or originating providers handling the code.

The implementation challenges associated with such a new "603 Plus" message, while substantial and time-consuming, also could occur faster than for a brand new response code like 607 or 608. SIP response messages are identified by a numeric response code in the first line. The subsequent format of the response varies based on that code, e.g., some headers may be allowed only for certain response codes, and the content of certain headers may be different or have different meaning, given different response codes. Typically there is at the edge of a carrier network a network function whose task includes the filtering of incoming messages. That function is often known as a Session Border Controller (SBC). SBCs are often implemented as "back to back user agents" (B2BUA's) which means they disassemble incoming messages, parse them according to their definition in standards, and examine the contents of every header. They

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[6] *See, e.g.*, INCOMPAS and the Cloud Communications Alliance ("CCA") Joint Comments at 1.

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then construct a message to be forwarded into the carrier's internal network, based on the content of the message received; omitting invalid or potentially dangerous content as required by carrier policy. That process requires that the SBC have pre-existing knowledge of the formatting rules associated with any new response code. Creation of that knowledge would be a significant development task for the SBC supplier in the context of 607 or 608. Similarly, carriers may have tools that monitor network performance, based in part on examination of SIP response codes, and the introduction of new response codes would create a need to modify these tools.[7] By contrast, alteration of the encoding rules associated with an existing response code like 603 to allow inclusion of a header that is itself already standardized, is anticipated to be much less work.

II. RESPONSE CODES 607 AND 608 PRESENT SUBSTANTIAL STANDARDIZATION, OPERATIONALIZATION AND IMPLEMENTATION CHALLENGES

A. The Standardization Activity to Operationalize the 607 or 608 Specifications Would Require Substantial Guidance From the Commission.

Before industry could begin implementing 607 or 608, the codes would first need to be standardized and operationalized via the appropriate industry body or bodies. For that process to proceed successfully and efficiently, the Commission would need to provide the industry body with guidance on the profile the standards body would need to develop to meet the new notification use case the Commission intends for them. The Fourth Report & Order's mandate that those codes be used in ways different than the uses contemplated in the original

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[7] The difference is less pronounced for service providers with more permissive SBC implementations that may simply allow the unknown response to enter their network and process it in a minimal way e.g., based on the first digit of the response code. For such implementations there may be little or no development required to support 607 or 608. Verizon, however, does not permit the introduction of elements of SIP messages that are unknown because of network security and reliability reasons. Even for service providers with more permission policies, presumably KPI tools in such networks would still require modification to properly reflect call failures associated with these response codes.

specifications has prompted confusion in the industry forums about what needs to be done to operationalize 607 and 608.[8] Statements from the calling party community that appear to assume or propose distinct, but ill-defined, use cases for 607 versus 608, have amplified that confusion.

First, the 607 specification approved by IETF contemplated that 607 would be used *within* the terminating provider's network so it can learn from called parties what calls are unwanted and train its blocking algorithms to more effectively block unwanted traffic.[9] Under the regime established in the Fourth Report & Order, however, 607 must always be transmitted throughout the entire call path all the way to the origination point of the call.[10] The Fourth Report & Order states that 607 "may be more appropriate" than 608 when "the called party plays a role in the rejection," but does not explain what circumstances should trigger the transmission of 607 to the origination point of the call. Some calling party commenters in this docket and participants in IP-NNI appear to interpret that statement to mean that 607 should be used when the *called party* makes an individual decision to reject a call (perhaps – although opinions vary – because of how their terminating provider has labeled it) whereas 608 would be used where the terminating network rejects the call based on analytics.[11]

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[8] *See* Verizon Reply in Support of USTelecom's Petition for Reconsideration and Request for Clarification, CG Docket No. 17-59, at 6-7 (filed Jun. 14, 2021).

[9] *See id*. and Petition for Reconsideration and Request for Clarification of USTelecom – The Broadband Association, CG Docket No. 17-59 (filed May 6, 2021) ("*Petition*").

[10] *See* 47 C.F.R. Section 64.1200(k)(9).

[11] For example, the Associations state that 607 is for "end-user blocking" whereas 608 is for "blocking in the network based on reasonable analytics." *Associations' Comments* at 4. The Order on Reconsideration clarifies that "immediate notification to callers is necessary only for calls blocked pursuant to any analytics program" (see Order on Reconsideration at para. 23), which calls into question whether there is ever a use case for using 607 as set forth in Section 64.1200(k)(9).

That confusion matters because the industry practices that the standards bodies develop to operationalize 607 or 608 would need to be guided by the Commission's public policy determinations and its intended uses of the codes. For example, the original IETF specification for 607 did not address privacy considerations because the information contained in the code was to be communicated inside the terminating provider's network. But to the extent 607 were to be used to always alert calling parties about consumers' specific decisions about whether specific calls are unwanted or not, the Commission would need to provide guidance; it cannot delegate the privacy and other issues raised to an industry standards body. Those issues include questions by members of the IP-NNI task force about whether consumers would reasonably want that information about their individual decisions to reject specific calls be conveyed to the party whose calls they have rejected. Because whatever code is used will have ecosystem-wide implications, the privacy issues are not limited to whether called parties would want enterprise callers to know they declined the call, but would also include whether individual end users should learn how the called party handled their calls.[12]

Similar confusion abounds about what flavor of the 608 specification the industry bodies would need to operationalize. For example, there is consensus that the original specification's proposed "jCard" – the encrypted header that would contain information about who blocked the call and why – is infeasible. But there is no consensus on whether 608 without a jCard can and should be evolved to include some other information about the identity of the blocking service provider, versus whether it can and should simply be operationalized with the jCard excised from

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[12] Similarly, IETF's original 607 specification did not address certain security risks such as man-in-the-middle attacks that may not have been considered relevant to the implementation that the specification contemplated. A responsible standards analysis should assess that and other risks that have become *de novo* considerations due to the Commission's re-purposing of the IETF specification for previously-uncontemplated uses.

the specification.[13] Before industry could undertake standardizing and operationalizing 608, the

Commission would need to issue guidance on the profiles that industry would need to develop.

The Commission would also need to issue operationalization guidance on the interface

between origination points and the originating network. Some enterprises connect to their

service providers via "network-to-network" interfaces, but in other cases they connect via end

user devices or private branch exchanges (PBXs). The Commission determined in its Order on

Reconsideration that an originating service provider "must transmit the appropriate response

code to the origination point of the call, which means that the code must be made available to

callers that are able to receive it."[14] But it did not provide guidance on how that determination

intersects with the portion of the 608 specification that addresses interworking between the

service provider's network and the origination point. The 608 specification provides a way for

the calling equipment or device to indicate, via the SIP interface with the network, whether it

stands ready to receive the 608 code or not.[15] Given that the Commission appears to contemplate

an administrative "case-by-case" approach to determining whether the code should be passed, it

is unclear whether industry should deprecate this aspect of the 608 specification.

Contrary to some calling parties' assertions,[16] it is not possible for industry bodies to

undertake meaningful work to operationalize any code absent a clear understanding of how

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[13] VON appears to be comfortable with industry moving forward with a "naked" jCard that does
not contain information identifying the blocking service provider because calling parties could
associate the called number with the terminating carrier. VON Comments at 6 n.7. It is not clear
to Verizon, however, whether other calling parties would agree, and it would make no sense for
the standards bodies to make assumptions about use cases that the calling party community
might subsequently challenge.

[14] Order on Reconsideration at 16.

[15] *See* RFC-8688, Section 3.3 n.9.

[16] *See Associations' Comments* at 4.

service providers and other parties are expected or required to use the code in real life.[17] If the

Commission decides to direct industry to use 607 and/or 608 (and it should not), it would need to

guide the standards-setting process to explain what the uses of those codes are and how industry

should address the privacy and other new issues they raise. Absent such guidance, the industry

bodies would need to guess at what use cases they are solving for, which would be a recipe both

for slow progress and for decisions that the calling party community may not like.

B. Once the Mandated Uses for 607/608 Are Understood, IP-NNI Would Need to Operationalize and Map 607/608.

After Commission clarification of the new use cases for 607/608 and clarification of

privacy and other policy questions, industry bodies may need to evolve the IETF specifications

to reflect the substantially new uses to which they are being put. The 607 RFC at a minimum

would need a profile that addresses the privacy and issues associated with its use, and 608 may

need to be evolved to include an optional reason header or other way to replace the jCard with a

more accessible way to identify the blocking party.

Once the 607/608 specifications have been evolved consistent with the use case guidance

from the Commission, the IP-NNI could operationalize and map them to ensure that the codes

can be used in a consistent way throughout the ecosystem and to avoid unintended consequences.

The mapping work would be particularly important because of the extensive instances where

there is TDM in the middle of call paths. Although the Fourth Report & Order mandates that

SIP response codes 607 and 608 be mapped to Q.850 cause value 21, and that Q.850 cause value

21 be mapped to SIP code 603, 607 or 608 when the location sub-field of the Q.850 cause IE is

"user," the industry bodies should have the flexibility to explore other mapping that may make

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[17] *See, e.g.*, Incompas and Cloud Communications Alliance Comments at 3-4.

more sense to operationalize. For example, RFC 3261 indicates that SIP requests to which the

network responded with existing SIP response code 403 ***should not*** be repeated (ref. section

21.4.4). Notably, many in-service PSTN gateways are configured to automatically map

incoming codes with Q.850 cause value 21 to SIP response code 403 and cannot be reconfigured

to do otherwise, a fact that industry standards bodies should be permitted to consider.

C. Even Once 607 or 608 Could Be Standardized and Operationalized Consistent with Commission Guidance, Implementation by Service Providers and OEMs Would Involve Substantial Complexity and Time.

While the standardization and operationalization processes for 607/608 present

substantial challenges and would require Commission input to be productive, the longest pole in

the tent for a 607/608 mandate would be the implementation work that operators would need to

subsequently undertake. Based on discussions with vendors and its experience with similar

projects, Verizon's project management teams estimate that implementing 607 or 608 across all

network platforms would take at least 66 months, assuming no unexpected delays occur.[18]

Specifically, network, standards, IT, and account teams of Verizon and other service

providers would need to undertake the following tasks:

Task	Comment
Industry standardization/operationalization.	Requires Commission guidance on use cases. Timeline will depend on the scope of the work needed to develop profiles for operationalization of the response codes.
Overall network design analysis (identifying and analyzing applicable call flows within each platform and technology).	Serial to the previous task.
Requirements development for generation of appropriate SIP release messages for analytics blocking.	Can proceed in parallel with the previous task.

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[18] For 608, that assumes there is no jCard and no need to create a profile for 608 that includes a different way to communicate the identity of the blocking service provider.

Requirements development for passing back of appropriate SIP release messages for analytics blocking.	Can proceed in parallel with the previous task.
Requirements development for optionally back of appropriate SIP release messages toward the enterprises that are capable of receiving them.	Can proceed in parallel with the previous task.
Communications with Enterprises to explore CPE capabilities and understanding their readiness to accept SIP release messages.	Serial to previous task.
Communications with Third Party call processing platforms (e.g. NICE inContact, etc.) to align on requirements.	Can proceed in parallel with the previous task.
Documenting and aligning with vendors on requirements (including third party call processing and business support systems) and committed roadmaps for delivery.	Serial to previous task.
End point device software verification and/or upgrades to ensure graceful handling of new or modified SIP response messages.	Can proceed in parallel with the previous task.
Commercial SOW work (creating commercial SOWs and approval process).	Serial to previous task.
Network element vendor development work (various switch element types).	Serial to previous task. There are numerous switch element types that would need upgrades. Some could occur quickly, but based on discussions with vendors and experience with similar projects like STIR/SHAKEN, some will likely take between 12 and 18 months.
Vendor development work (various third party platforms).	Same as above.
Vendor development work on operational support systems (e.g. signaling tools, performance analytics, alarming).	Some can proceed faster but many are likely to require 18 months or more. Can proceed in parallel with the previous task.
Provisioning development work (For enterprises to selectively accept code).	Can proceed in parallel with the previous task.
Service provider lab testing (unit testing).	Serial to previous task.
Service provider lab testing (integrated between platforms).	Can proceed in parallel with the previous task.
Creating new processes and procedures for handling of new SIP release codes such as establishing thresholds, ticketing systems, KPI metrics.	Serial to previous task.
Employee training for integration of changes to SIP signaling.	Serial to previous task.

Initial Production deployment for network element software upgrades and configuration changes (First deployment, interoperability testing, soak, verification).	Serial to previous task.
Full production rollout of network element software upgrades and configuration changes.	Serial to previous task.

Because it is easier to implement the codes across some call flows than for others, the volume of 607/608 codes arriving at origination points may start to increase prior to the end of the overall project management period. But the overall timelines for network-wide implementation of 607/608 would be many years.

III. THE COMMISSION SHOULD ESTABLISH A *SINGLE* NOTIFICATION TECHNIQUE TO AVOID IMPOSING BURDENSOME DUPLICATIVE OBLIGATIONS.

The Commission should adopt a single response code as the exclusive way calling parties will be notified of blocked calls. A rule that provides terminating service providers the option to use multiple different response codes when blocking calls would require all service providers in the call path to modify their equipment to handle each authorized code, thereby creating major unnecessary costs and burdens. Establishing a single code to be used to indicate calls have been blocked due to analytics would address the calling party community's request for a uniform approach to blocking notification that does not require them to monitor for multiple different codes.[19]

IV. ANY RESPONSE CODE MANDATE SHOULD ADDRESS THE NEED FOR IMPLEMENTATION FLEXIBILITY.

The Commission could reasonably require terminating service providers engaged in blocking to implement any response code mandate for all of their blocking by a specific date.

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[19] *See Associations' Comments* at 7.

But other service providers in the call path should not be subject to an inflexible mandate. Instead, originating and transit service providers should have flexibility to implement the codes in ways that bring maximum benefit to their customers, especially high volume enterprise callers, and should not face a date-certain for ubiquitously deploying the functionality across all network elements.

Verizon's experience with network upgrade projects such as STIR/SHAKEN demonstrates there are frequently pockets of traffic that, due to factors such as vendor delays and the existence of legacy equipment that cannot readily be upgraded, will necessarily take longer than other parts of the network. The Commission should expect service providers to prioritize implementation for the call flows that will have the greatest benefit for their customers, and each transit and originating provider should have flexibility to focus its resources on those call flows as opposed to achieving uniform implementation.

Importantly, the existence of some pockets of traffic flowing over network elements that are not upgraded to pass the codes would not thwart the Commission's goal of ensuring that calling parties receive notification of blocked calls. A service provider should not be required to ubiquitously implement a new notification response code mandate – whether an evolved 603 or a new 607 or 608 – across its entire network within a set period of time. This is very different from the STIR/SHAKEN mandate, where driving toward ubiquitous deployment of STIR/SHAKEN by eliminating any pockets of unsigned traffic was sound public policy because call authentication will only help restore trust in caller ID if it is widely deployed throughout industry. But that policy rationale does not apply to implementation of notification response

codes because what matters in that context is whether enough codes reach the calling party to communicate that a number is triggering blocking.[20]

Verizon does not oppose the Associations' proposal that service providers be required to regularly update the Commission on their progress implementing the new code.[21] As long as transit and originating service providers confirm they are actively working to implement the code and are making meaningful progress, the Commission should not impose a date-certain for them to achieve network-wide deployment.

CONCLUSION

For the reasons set forth above, the Commission should mandate that response code 603 be used when terminating service block calls based on analytics. It should not mandate or authorize that 607 or 608 be used for that purpose.

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[20] In any event, large numbers of the SIP codes would be lost because of TDM in the middle.

[21] *Id*. at 4. The Commission should also invite service providers, analytics engines, and others to report any instances of unintended consequences associated with the response code mandate. Verizon and others have identified what we believe are security risks and risks that bad actors will use the codes to bypass blocking tools. *See* Verizon Reply in Support of USTelecom's Petition for Reconsideration and Request for Clarification, CG Docket No. 17-59, at 2 (filed Jun. 14, 2021). The Commission could receive those status reports via the major trade associations instead of directly from service providers.

Respectfully submitted,

/s/ Christopher D. Oatway

William H. Johnson
    Of Counsel

Gregory M. Romano
Christopher D. Oatway
1300 I Street, N.W.
Suite 500 West
Washington, DC 20005
(202) 515-2400

*Attorneys for Verizon
and Verizon Wireless*

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